1.0 INTRODUCTION

The State of Montana Multi-Hazard Mitigation Plan and Statewide Hazard Assessment is the State's primary hazard mitigation document. It is the product of extensive input from governmental and tribal agencies, non-governmental organizations, in-depth research, and hazards analysis. The results are stand-alone sections, statewide in nature, useful for many entities throughout the State of Montana, and expandable as events occur and better data is developed. The document is organized into several major parts, establishes a process for broad governmental and organizational involvement, provides a comprehensive and detailed statewide hazard assessment, and demonstrates the overarching mitigation strategy for the State of Montana.

Section 2 contains a discussion of the Planning Process utilized for development of this document and the integration of this document with other State Plans and Programs.

Section 3, the Hazard Assessment, identifies and profiles the following major hazards in Montana:

- Communicable Disease
- Earthquake
- Flooding
- Hazardous Materials Incidents
- Landslide
- Terrorism and Violence
- Volcanic Eruptions
- Winter Storms and Avalanche
- Drought and Effects of Drought
- Severe Thunderstorms, Hail, Wind and Tornadoes
- Wildland and Rangeland Fires

The history of occurrence, the probability of occurrence, the severity resulting from, and the vulnerability to each of these hazards is individually discussed. Where possible, data is mapped to show vulnerability by jurisdiction, and in particular, to state-owned facilities. For greater detail by jurisdiction, local data was incorporated where practicable and available. Local Hazard Mitigation Plans are (both approved and draft versions) linked electronically to this document.

Section 4, ***t***he Mitigation Strategy, looks at overall mitigation in Montana and pulls together various factors including: statewide goals and objectives; mitigation projects from the local plans, projects being considered by the state, and specific statewide projects; a prioritized list of state-specific mitigation projects; state and local capabilities; and, funding sources. The mitigation strategy considers the natural and man-made events identified in the hazard assessment and proposes potential solutions with a method and means for following those potential solutions through project completion. The mitigation strategy does not establish or redefine mitigation in Montana, but rather provides a comprehensive look at the system for achieving disaster resistance.

Section 5 contains a discussion of the status of Hazard Mitigation Planning Efforts at the local levels, technical and financial assistance available, integration of the approved Local Hazard Mitigation Plans into the State's Plan and the approach utilized by the State to prioritize proposed mitigation projects.

Section 6 discusses Plan Maintenance/Update and Mitigation Project Monitoring/Evaluation procedures, and ***Section 7***consolidates references utilized in the Plan.

The State of Montana Multi-Hazard Mitigation Plan and Statewide Hazard Assessment strives to clearly identify and profile the hazards that pose the greatest threat to the state and prevent damages and losses in the future. The ultimate objective is to make the State of Montana a safer place to live, work, and visit.

This document comprises the 2007 Update to the State of Montana's Multi-Hazard Mitigation Plan and Statewide Hazard Assessment. It has been prepared for the State of Montana, Department of Military Affairs-Disaster and Emergency Services Division by Tetra Tech Inc., under Contract No. MIL07- 13730 executed on November 14, 2006 under the direction of the State Hazard Mitigation Officer (SHMO). The original document was prepared by Resource Management Services, Inc. (Prime Contractor), Land and Water Consulting (Sub-contactor), and Big Sky Hazard Management, Inc. (Sub-contractor) under Contract No. MIL04-785J executed on November 10, 2003.

1.1 PURPOSE, SCOPE, AND AUTHORITY

The State of Montana Multi-Hazard Mitigation Plan and Statewide Hazard Assessment was developed with the purpose of documenting historical hazard events and vulnerabilities, and strategies for mitigation that will make Montana a more disaster resistant State. This comprehensive and resourceful document is intended to clarify hazard information and actions that can be taken to prevent damages. As is the case with all disaster plans, this Plan does not identify or list every possible hazard. Furthermore, events listed may not occur in the manner identified. The Plan is a tool that should be used to enhance the State's preparedness to the events listed.

The authority governing the Plan's development and contents is Section 322 (Mitigation Planning) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390). Specifically, the plan is to meet the requirements of the Interim Final Rule published in the Federal Register on February 26, 2002 at 44 CFR Part 201. Meeting these requirements will allow the state and communities with approved local plans to apply for federal mitigation assistance, both pre- and post-disaster.

The scope of this Plan is to meet the required elements of a Standard Level State Plan with the potential to expand to an Enhanced Plan at a future date. The development of this Plan was limited by the time and funding available. Funding for the initial development of the plan was provided by the Federal Emergency Management Agency through the Pre-Disaster Mitigation (PDM) grant program in Fiscal Year 2003. The subsequent three year update, as required by the Disaster Mitigation Act of 2000, was funded through the FEMA PDM-C 2006 grant program. The scope of the State of Montana Multi-Hazard Mitigation Plan and Statewide Hazard Assessment will continue to expand over time and will be dictated by the available funding and by the availability of more information.

1.2 STATE OVERVIEW

Montana is a large, sparsely-populated State with an economy that has historically depended on natural resource-linked industries. The open plains of central and eastern Montana provide land for grain farming, grazing for large herds of beef cattle, oil and gas fields, and rich coal deposits. The mountainous regions of western Montana yield timber for wood products manufacturing and minerals for mining. Recent years, however, have seen the state relying less on its natural resources, and branching out into a more diversified economy.

The Continental Divide runs through Montana along the crests of the Rocky Mountains from Canada to Mexico, literally dividing the waters of the North American Continent. Montana is known as the headwaters state because much of the water which flows to the rest of the nation comes from the mountains of Montana. Two of the nation's major river systems, the Missouri and Columbia, are born high in the Rocky Mountains of Montana. **Table 1.2-1** presents Montana State Facts and **Table 1.2-2** presents the Montana State Symbols.

Information presented in this section has been complied by the Research and Analysis Bureau, Workforce Services Division, Montana Department of Labor and Industry and additional information can be found at http://rad.dli.state.mt.us/pubs/mtfacts.asp.

Table 1.2-1 Montana State Facts

Admitted to the United States:	Nov. 8, 1889, the 41st state
Population:	944,632 (2006 Census estimate) According to the 2006 Census, Montana has 6.2 persons per square mile and is the 44th most populous state
Capital City:	Helena, population is 25,780 (2000 Census estimate)
Largest City:	Billings, population is 89,847 (2000 Census estimate)
State Name:	"Montana" is from the Latin word for "mountainous region"
Size:	147,046 square miles in total area 145,556 square miles in land area 1,490 square miles in water area 94,109,440 total acres 4th largest state Greatest distance from East to West Boundary: approx. 550 miles Greatest distance from North to South Boundary: approx. 320 miles in western Montana and approx. 280 miles in eastern Montana
USGS Physiographic Regions:	Rocky Mountain Region in the west; Great Plains in the east
Number of Counties:	56
Number of Tribal Reservations:	7
Number of Incorporated Cities and Towns:	126
Longitude and Latitude:	Between 44 degrees 26' and 49 degrees North Latitude and 104 degrees 2' and 116 degrees 2' West Longitude
Highest Point:	12,799 feet (3,901 meters) above sea level at the summit of Granite Peak in Park County near the south central boundary
Lowest Point:	1,820 feet in Lincoln County in the northwest corner where the Kootenai River enters Idaho
Mean Elevation:	3,400 feet
Total Land Area:	145,552 square miles
Length of Canada/ US Border	545 miles

Table 1.2-2 Montana State Symbols

Nickname:	Treasure State Montana is also known as Big Sky Country, Land of the Shining Mountains, Mountain State, Bonanza State, and Headwaters State.
State Animal:	Grizzly Bear
State Bird:	Western Meadowlark
State Fish:	Blackspotted Cutthroat Trout
State Flower:	Bitterroot
State Fossil:	Duck-billed dinosaur (Maiasaura Peedblesorum)
State Gemstones:	Sapphire & Agate
State Grass:	Bluebunch Wheatgrass
State Tree:	Ponderosa Pine
State Butterfly:	Mourning Cloak
State Song:	"Montana"--written one night by a Montana newspaper editor and famous songwriter in 1910
State Ballad:	"Montana Melody"--Montana is one of few states to have a state song and ballad

Climate Extremes

The world record for a 24-hour temperature change occurred in Loma, Montana (Chouteau County) on January 15, 1972. The temperature rose 103 degrees, from -54°F to 49°F. The coldest temperature ever recorded in Montana was -70°F at Rogers Pass north of Helena (Lewis & Clark County), on January 20, 1954, a national record for the lower 48 states. Montana has reached 117°F twice in recorded history – the first time in Glendive (Dawson County) on July 20, 1893 and then again in Medicine Lake (Sheridan County) on July 5, 1937. **Tables 1.2-3, 1.2-4 and 1.2-5** show the five hottest places, the five wettest places, and the five coldest places in Montana, respectively.

Table 1.2-3 The Five Hottest Places in Montana

Location	County	Average Daily High in July
Hardin	Big Horn	91.7°F
Yellowtail Dam	Big Horn	90.7°F
Lame Deer	Rosebud	89.9°F
Birney	Rosebud	89.9°F
Hysham	Treasure	89.6°F

Notes: Based on maximum normal temperatures from 1961-1990 for reporting weather stations[1]

[1] *James R. Owenby and D. S. Ezell*, Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree Days, 1961-90, Montana. *Asheville, N.C.: National Climatic Data Center, 1992*.

Table 1.2-4 The Five Wettest Places in Montana

Location	County	Average Annual Precipitation
12 miles northeast of Bozeman	Gallatin	35.15 inches
18 miles north of Troy	Lincoln	34.90 inches
Hungry Horse	Flathead	34.48 inches
2 miles northwest of Heron	Sanders	33.86 inches
Hebgen Dam	Gallatin	30.11 inches

Notes: Based on annual precipitation normals from 1961-1990 for reporting weather stations near populated areas[1]

Table 1.2-5 The Five Coldest Places in Montana

Location	County	Average Daily Low in January
Westby	Sheridan	-5.8°F
10 miles north of Opheim	Valley	-3.3°F
12 miles southeast of Opheim	Valley	-2.9°F
Redstone	Sheridan	-2.7°F
Culbertson	Roosevelt	-2.0°F

Notes: Based on minimum normal temperatures from 1961-1990 for reporting weather stations[1]

Population

Montana's population breakdown is described in the following three tables. **Table 1.5-6** presents Montana's rank compared to the other 50 States. **Table 1.5-7** presents the racial makeup of Montana's population. **Table 1.5-8** presents provides statistics on Montana's tribal governments.

Table 1.5-6 Montana's Ranking Among the 50 States[2]

Item	Rank	Montana	U.S.
Total Population (2006 Census Estimate)	44th	944,632	299,398,484
Population per Square Mile (2000 Census)	48th	6.2	79.6
Percent Change in Population (1990-2000)	20th	12.9%	13.1%
Percent Population Under 18 Years of Age (2003 Census Estimate)	42nd	23.5%	25.1%
Percent Population 65 Years and Older (2003 Census Estimate)	10th	13.6%	12.4%
Median Age in Years (2000 Census)	6th	37.5	35.3
Home Ownership Rate (2000 Census)	26th (tie)	69.1%	66.2%
Public High School Graduation Rate (2000 Census)	10th	78.0%	67.0%
Per Capita Income (2003 Census Estimate)	44th	$25,920	$31,632

[2] Montana Department of Labor and Industry, Workforce Services Division, Research and Analysis Bureau, June 2002.

Table 1.5-7 Montana's Racial Makeup[3]

Race	Number of Persons	Percent of Total MT Population
White	817,229	90.6%
American Indian, Eskimo, or Aleut	56,068	6.2%
Hispanic	18,081	2.0%
Asian or Pacific Islander	5,161	0.6%
Black	2,692	0.3%
Other	5,315	0.6%

Table 1.5-8 Tribal Governments[4,5,6]

Names and Reservation Headquarters	Date Established	Resident Tribes	Indians on Reservation (2000 Census)	Enrolled Tribal Members	Non-Indians on Reservations
Blackfeet Browning, MT	1851	Blackfeet	8,507	15,300	16%
Crow Crow Agency, MT	1851	Crow	5,165	9.000	25%
Flathead Pablo, MT	1855	Salish Kootenai	6,999	6,900	73%
Fort Belknap Harlem, MT	1888	Assiniboine Gros Ventre	2,790	4,000	6%
Fort Peck Poplar, MT	1888	Assiniboine Sioux	6,391	11,000	38%
Northern Cheyenne Lame Deer, MT	1884	Northern Cheyenne	4,029	7,900	10%
Rocky Boy's Box Elder, MT	1916	Chippewa- Cree	2,578	4,700	4%
Little Shell* Great Falls, MT	2000	Chippewa- Cree	N/A	4,000	N/A

Notes: *The Little Shell Tribe does not have a reservation.

[3] Data compiled by U.S. Bureau of the Census, Washington, D.C., 2000, and processed by the Census and Economic Information Center of the Montana Department of Commerce, August 2000.

[4] The Tribal Nations of Montana, A Handbook for Legislators, Helena, MT, Legislative Council, 1995
[5] Montana Indians: Their History and Location, Helena, MT, Office of Public Instruction, 1989
[6] US Census Bureau, 2000